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The Scholar

A Monthly Journal Devoted to Literature, Science & Art.

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JANUARY 1938

"The ink in the well of a Scholar is more precious than the blood of Martyrs."

1674

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THE SCHOLAR

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A CORRECTION

We beg to draw the attention of our readers to the following two corrections in the article, in our Annual Number, on "Prison Reform" by Mrs. M. E. Cousins (Page 91).

In line 4, for "any given day" read "any given year".

In line 5, for "Rs. 1,750,000" read "Rs. 17,037,505".

—*Ed*

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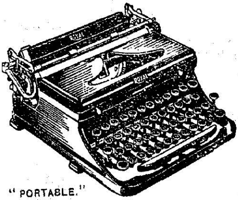

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"BUDDHA, THE CONQUEROR"

By Nicholas Roerich

(Roerich Museum, New York)

THE SCHOLAR

Vol. XIII	JANUARY 1938	No. 4

Attraction

(DIARY LEAVES)

BY NICHOLAS ROERICH

LIVINGSTONE could only be taken away from Africa dead, so much did he love this part of the world. Casati was forcibly removed from Africa only in which he felt himself at home. All the remainder of his life, passed in Italy, his native land, he felt unhappy.

There could be enumerated a great number of diverse examples of such as it were incomprehensible attractions to a definite part of the world or even to a definite place. There are Spaniards by blood who cling to Havana or South America. There are Britons who have become for ever attached to Australia. There are Swedes, French, Russians who can breathe only the air of Asia.

In human life it is so difficult to explain attractions, from the loftiest to the most everyday. On the one side we see attraction to the place of one's birth. There are many explanations for this. But how then can we divine an inexplicable over-powering attraction to some far-removed place on the earthly globe. Often people strike out thither as if accidentally. And all at once they find themselves as it were anew in their native setting. Of course no one has expelled them from their birth-place. No offences or crimes have driven them beyond remote seas and mountains. Consequently there must have been some other basis, some other magnet, which compelled them to

strive with the whole heart to a place which no rational process could have counselled.

Such attractions are entirely distinct from the proper desire of youth to set out somewhere, to get away somewhere to spread their wings somewhere in new air. In the hour of such decisions the youthful searcher does not even give a thought as to precisely whither he wishes to go. He knows only calls, perhaps cries of the heart, which draw him to finding out about something. Usually noble characters are to be found in such seekers. They are voluntarily searching for some testing. These first days of independence will for ever remain for them a beacon of stimulation.

In thought we send greeting to one of our American friends, who now, in the twilight years, with especial animation and tenderness recalls his first boat journey as a youth. This wise old man has related to me how, in his turn, he sent his only grandchild on horseback from the Pacific Ocean to the Atlantic, in order to accustom the ten-year-old to complete independence. Probably somewhere on the marked-off route there was unseen care for the young wayfarer, but for all that he had to carry out his task, left to his own resourcefulness and reliability. Of course travel in America, unusually complex and crowded with movement, can sometimes be full of all sorts of surprises. Besides, there was the stipulation that the young horseman not only preserve his own health, but that he keep his mount in good condition. Doubtless such a trip will remain in his memory as long as he lives.

Likewise we have all read about young people who have rushed off to America in quest of a new life. And in such cases the journey itself drew them, the search for new solutions of life, but for all that, this was not always the discovery of the desired place in which they would like to localize work and life.

Otherwise sounds the story about a five-year-old Tibetan lad who repeatedly and unrestrainably went off to some home of his own. The boy dressed himself as it were for the road. He tied on his back a supply of food

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and a sacred book, and at a convenient moment he disappeared from the house. When they rushed off to search for him, they found him going along the mountain pathways. They tried to persuade him to return home. They told him that he ought to get back to his own house. But the lad assured them that he was going to precisely his own real home, that the house where he had lived up to that time was not his, and that he must hasten to his real home where he must remain. We passed this place just as the boy had left for the fourth time and we do not know how it ended up.

In any case, this was some sort of irresistible attraction and it is quite possible that if it remained unfulfilled, the little one would wither, as a blossom without moisture. It was amazing to observe that the five-year-old urchin explained so seriously about his real home to which he must go.

Here are Livingstone and Casati and all the countless wayfarers to their real homes, they would wither if they could not succeed in reaching their destination, so clear in their hearts. Besides this circumstance is especially striking, that these aspirants were not seeking only the salubrious conditions of nature, they were not striving for some well-ordered place of abode. On the contrary, their home, their real home involved much hardship. Such a longed-for home was often almost unendurable for their bodies, but for all that their spirits exulted and felt themselves at home.

"Beauty lies in the eyes of the beholder."

This adage shows deep insight. In it is emphasized an inner significance which surpasses everything external. If such a wayfarer has found his home, it would be ruinous to tear him away in accordance with some external circumstances. No official advancements, no tempting advantages can compensate a man for the home which he has finally discovered. He need not be made a member of the nation or tribe among which this inexplicable home of his is located. He is attracted thither not so much by

the people as by all the other circumstances of existence. Of course when such is good for a man, it is usually not even possible to explain in words why it is good for him. Sometimes this feeling of well-being arises even under very arduous circumstances.

Precisely likewise, when a man encounters his fellow-wayfarers or his opponents, often he cannot give himself any rational explanation, yet through his eyes and his heart he knows much which cannot be expressed by words. People ought to refer with all care to such attractions. They should grasp them in their very inceptions in order not to extinguish or shatter them by the fettering action of the reason. If such an attraction has awakened in a man, his nature may alter, he may be forever corrupted, but nothing will succeed in expelling from his consciousness that which his heart, his spirit knows.

We also know people who have been permanently wounded. Someone has sometime not admitted them to their recognized home. Or someone or something has deprived them of a discovered fellow-traveller. The ignorant consider such attractions nonsense, preconception, which should be terminated by any means. These ignorant ones never reflect whither, from what cause, this knowledge emanates. But on the other hand it can be seen what an enormous significance for the entire life of a man is produced by the discovery of this his recognized home, by the finding of his recognized home, by the finding of his destined, formerly encountered, fellow-traveller. Even if for some reasons, for some good, the man should be voluntarily separated for a time from his home, his companion, nevertheless all his activity in the course of the temporary separation will proceed under the sign of the achieved realization.

The man has found his home, he has found his companion, he has been fortified by long-established magnets, and thus the more clearly and resonantly can he produce great usefulness for his fellow-man. The heart knows when it is again fitting to make contact with some other homes,

and when the hour approaches to inspire some other fellow-travellers. Such straight-knowledge of the heart does not weaken a man, it merely transforms his activity; many ask, whence are such forces, such assurance to be taken? They proceed from realization of the desired home, from the mutual strengthening of the longed-for companion. The family and teachers must deal very carefully with such a manifest attraction. The home may be very near, or it may be beyond mountains and valleys. And the companion will be found when nothing is allowed to obscure the true destined attractions.

"How Can the People of the World Achieve Universal Disarmament?"*

BY RABBI JOSHUA TRACHTENBERG

THERE are two contending wills at work on the earth today: the will of the people for peace, and the will of their governments for national power and glory. The people want food, security, leisure to enjoy the meagre fruits of their labor--peace—but their governments barter these away for cannons and tanks and airplanes, and persuade them that war is inevitable, and holy.

It must be evident by now to even the most myopic that our governments will not institute the reign of peace on earth. For a brief period after the World War, those who could shut their eyes to the iniquities of the Peace Treaties were entranced by a mirage of international amity and co-operation. Had not the nations agreed to meet together in family union, to settle disputes, such as may arise in even the best-ordered households, amicably and equitably, to unite for the maintenance of order and for the spread of enlightenment, to protect the rights of the weak, as of the strong, and most marvellous of all, to disarm progressively until the victors reached the level imposed upon their former enemies? Here was enshrined a great principle of justice and of peace—to establish the "punishment" of the vanquished as the order of the world, to abolish war by the simple and logical expedient of destroying the tools of slaughter.

This was a scheme which won the hearts of men. If the four ghastly war years might eventuate thus, then perhaps the holocaust had not been in vain. On this issue of peace mankind stood then, and stands today, as one. The

* Paper which won the second prize in the World Competition of the New History Society, New York. The paper which won the first prize was published in our last issue.

common people of this earth desire nothing more ardently, than to be spared the horror and degradation of futile war. But the mirage was soon dissipated; no dreamer is left to pin his hope for peace and disarmament upon the regularly constituted governments of the earth. "Disarmament" conferences have proven to be mere jockeying grounds where each delegate intrigued to win military advantage for his nation while preaching disarmament for others. Nothing could have been more disillusioning—and in the end, more enlightening—than the pained aloofness with which the Russian proposal of 1927 for "an immediate complete, and general disarmament" was received.

The leaders and rulers of the nations will not disarm. On the contrary, they are frenziedly piling up weapons of destruction, and schooling their sheep for the inevitable slaughter. It is a lie that this policy is forced upon "good" nations by "evil" ones. Did the "good" nations disarm when the "evil" were impotent to attack them? In the years when the *betes noires* among nations were stripped of offensive power did the others deprive them of all excuse for re-arming by shedding their own armor? National prejudices and ambitions have painted all governments with the same tarry brush. Always the specious apology, "Our neighbours are arming!" And, as though fixed in marble, our neighbors' finger points to us. The gaping cannon mouths yawn wider and hungrier, impatient for the feast.

Fatalism becomes the fashion. The people are powerless to act; they can only hope, and know that they hope in vain. Yet underneath there still stirs the uncrushable desire for life and peace, the dream that some miracle will intervene. Given the way out, few are the men who will not embrace it with overwhelming joy.

Can we entrust the fate of the world to a tactic of vociferation? More conferences? More peace societies? More anti-war propaganda? One may doubt that such measures will be more effective tomorrow than they were yesterday. Governments dominate mind as well as body, they can mould attitudes and sentiments as they list, however

little they may affect our innermost aspirations and dreams. The will of the people for peace is no secret. Yet democratic states, ostensibly responsive to the popular will, are not to be outdone by the most warlike dictator in preparing for war while talking peace, confident that they can bludgeon their peoples into acquiescence. Is not Great Britain arming today to ensure the peace of Europe? Does not the United States add battleship to battleship without the slightest intention of using them for war? Perish the thought! The people want peace, and they shall have it – with greater armies and navies, new and more ingenious engines of destruction!

So long as the rulers of the nations, obsessed with archaic ambitions, are subservient to the forces that make for war, they will prepare for war regardless of the peoples' wish. And they will convince the people that they have no cause for fear, until the hour strikes when it is too late to turn back. Of this we may be certain: the rulers who can induce their people to countenance military preparedness can convince them that the sequel is of their own choosing. *Dulce et decorum est pro patria mori!* The most pervasive and loudly-proclaimed desire for peace does not for an instant embarrass these devil's advocates.

Universal Disarmament will be brought about by no mere expression of popular will. What is required is the transformation of that will into *the power to act.*

If we are to be completely honest in this matter—and the hazard is too great to risk more of the dishonesty that is rushing us willy-nilly into a new slaughter-fest—we must discard the fancy nostrums that have passed momentarily for panaceas and get down to a serious, realistic consideration of the problem. Such a course may be strenuous and disturbing, it may bring us to hard and painful conclusions, it may destroy our hopes of finding some sort of magic formula which will overnight deliver us from this strait, but only out of it can come the effective program for world disarmament.

Love, good-will, justice, brotherhood are beautiful ideals, but in the present state of the world we cannot build

a practical program out of them. We may as well recognize at the start that all men believe in these, even the worst, but few indeed act upon them. Can we afford to mark time until mankind has experienced an overwhelming change of heart? Shall we wait for the miracle? Or rather, hadn't we better recognize that the millenium will arrive only when we shall have created the objective circumstances which will render it profitable for men to live by these ideals? Out of mere preachment, however inspired, will not come peace—only the grim preparation for war that goes on hourly while the people dream.

Where shall we seek this realistic approach? It is simple enough to say: Let the people command their delegated leaders to disarm! But what and whom do these delegated leaders really represent? Is it the people, who have secured them in their seats of power? (In authoritarian as well as democratic states, be it noted, the final hypocritical appeal of authority is to its mandate from the people.) Obviously, no! For here in the most crucial issue affecting the fate of millions the voice of the people goes unheeded. The basic and ineluctable truth of modern government is that an unbridgeable gulf yawns between the needs and desires of the masses and the ambitions and motives of their rulers. These rulers, elected or self--appointed, by virtue of the social and economic forces which dominate our world, are the servants, consciously or unconsciously, of a small minority everywhere, whose values are not those of the people, and whose interests are diametrically opposed to theirs. The governments of the world are not diabolic, they are merely obedient—obedient to the *real* masters, who need armies and navies to protect *their* interests. This is why treaties, disarmament conferences, economic conferences, a League of Nations, petitions bearing millions of signatures, none can dull the machinery of destruction. The will of the people for peace is aborted by the superior will of the ruling minority, which decrees a policy of militarism and crams it down the gagging throat of the masses.

It needs but one further point to bring out the full tragedy of this dichotomy in our society. Who are the

"people" whose will for peace should prevail, yet whose unwilling fate is war? Obviously, those who by number and function are the most vital components of society—that great class which constitutes the vast majority of the citizens of every nation, that class which enable our social system to function, that class without which our civilization would be unthinkable—the workers. Factory workers, farmers, engineers, artists, writers, teachers, doctors, clerks, all those who, with hand and brain, fashion the material and intellectual and aesthetic wealth that makes our civilization and culture what it is—these are the "people." *They pay the price of war.* Their sweat tempers the steel, their bellies go empty, their minds are warped, they pay the taxes, they are herded in labor battalions, they parade back and forth on the drill field, they are cursed and insulted and degraded. And when the inevitable transpires, they do the killing, they are killed, their homes are shattered, their children are emaciated and crippled, their wives are raped, their paltry possessions are confiscated, their civilization is prostituted. *They pay the price, the workers—the people.*

And what profit accrues from all this heavy cost? What do *they* gain by this appalling sacrifice? Nothing! Absolutely nothing! If profits are made, it is not by them. If "honor" is preserved, it is not their honor. If empire is won, it is not they who win it. If victory is attained, they have no share in it. For them only bestiality, enslavement, torture, defeat. Always and inevitably defeat!

It is of the utmost significance, if we are to achieve disarmament, to realize that *the workers* are the "people"—the workers who lose all and gain nothing by war and its preparation. For the workers are a well-defined, cohesive class, they can be, and increasingly they are organized. Their fundamental interests bind them together, even before they know it. They are the true internationalists, transcending craftily manufactured "national" antipathies and rivalries—the people of the world. Those few who reap the profits of armaments and more armaments, of war and still bloodier war, those are the enemies of the people. So

long as the workers entrust their governments to the representatives of this group, so long as they permit them to manipulate mass prejudices and attitudes to suit their bloated purse and their monstrous morality, so long as they are content to remain in servitude, mouthing the slogans invented for them by their enemies, so long will the people's will for peace go unheeded.

There is only one way to achieve universal disarmament, a long and hard way, but the only one. The people --the workers—must speak their mind from the seats of government. While power is out of their hands they can only pray—and die. They must root out the features of our social system which enable a freebooting gang to prey on the masses. The workers must rule the world!

Then, and then only will we have universal disarmament, and peace. This is a stupendous program, but no more so than the problems it promises to solve. Nor is it merely another dream, a mirage. It is the vision of the new world which today already presages. The slow awakening of the people of the earth to their own stake in peace, the price they pay in war, is but one sign of the regeneration that the old world must soon experience. To be content with less is to open our arms blindly to destruction. The workers alone can put an end to war, by annihilating these forces which batten on war. The people—the workers--must rule the the world!

Cancer—The present state of our knowledge regarding its cause and cure

By S. KRISHNAMURTHY, B. Sc. (Hons).

MODERN medicinal science is undoubtedly a marvel. Its achievements towards the alleviation and cure of human maladies have, besides being highly beneficial to mankind, been most spectacular and staggering. But the problem of cancer has been a most baffling enigma which has till now successfully defied the most rational scientific approach. Unfortunately the death rate from cancer has been steadily increasing. To quote Sir Arthur Newsholme : " In earlier years, tuberculosis was the Captain of the Hosts of death. It has now only the rank of a lieutenant. It would shortly become a private soldier and there is reasonable hope that eventually it would be condemned out of the army. Now cancer has taken the place of tuberculosis ".

Cancer has thrown out an open challenge to the scientists, those intellectual giants who are repeatedly attacking it—only to be repulsed. The milestones in medical science are due to a co-operative effort on the part of chemists, especially the organic chemists—those wily necromancers with the test-tubes and chemicals—and medical men. But neither a co-operative effort nor a most systematic scientific approach has been able to bring into submission this giant of destruction who is roaming at large and taking a heavy toll. As a cause of recorded death at present, it stands next only to heart diseases. Yet its origin lurks in mysterious obscurity and regarding the mechanism of the development of malignancy we are still harbouring in cimmerian darknesses.

A simple treatment of this vital problem falls naturally into three divisions : (1) carcinogenesis i. e., the transformation of normal into malignant cells; (2) chemical and bio-chemical nature of tumours; (3) attempts to influence

the growth rate of tumours. An attempt will be made to deal with the subject under these three heads.

Generally cancer appears after the fortieth year. To quote Sir Arthur Newsholme again : "Both (tuberculosis and cancer) strike very heavily at the most useful years of life, tuberculosis especially when promise has not yet been fully redeemed in accomplishment and cancer in maturer years when accomplishment is curtailed and we are deprived of much of the invaluable contributions to social welfare and sound judgment which persons at and beyond the middle life can make." Cancer represents a condition of unchecked tumorous growth and cell proliferation. Normal cells multiply in an orderly fashion and under limiting control-mechanisms, but with malignant cells, proliferation is continuous and uncontrolled. Dr. E. Hurdon of the Marie Curie Hospital, Hampstead, says in an admirable review : "These (the cells) beginning to multiply for some cause or other, lose their capacity for any useful function in the body, proliferating in an irregular and purposeless fashion. And it is just the accumulation of these lawless proliferating cells, which give rise to the various manifestations of this disease—it may be in lump forms, or an accumulation of the cancer cell breaks down and forms an ulcer or gives rise to a discharge ".

One of the rational ways of approach to the problem is to investigate the manner in which it originates since a knowledge and insight into it might pave the way for development of methods of combating it. The discovery of so many substances and agents having this property of inducing cancer formation has given an additional interest to speculations concerning the cause of cancer ; tar, pure hydrocarbons and physical agents as soot, heavy oils, heat and radium are some of the agents which have now been proved to be capable of initiating the transformation of a normal cell into a malignant cell. It was known quite early that workers in the distillation of coal tar are peculiarly prone to develop a kind of skin cancer. Thanks to the brilliant work of the London Cancer Hospital, under the distinguished leadership of Professor Kennaway, the

chemical isolation from coal tar of the principal carcinogenic agent, 1 : 2-benzpyrene and the synthesis of other pure carcinogenic hydrocarbons was made possible. The observations of the English workers Kennaway, Cook and others led them to conclude that all of the active carcinogenic agents contain what is known as "phenanthrene" nucleus. (Recently some compounds have been prepared which are carcinogenic, though they do not contain the phenanthrene nucleus). On this basis Cook drew attention to the similarity of the carcinogenic agents then known to the structure of the sterols, bile acids and sex hormones which also possess the carbon skeleton of "phenanthrene".

Another important advance was made when a hydrocarbon "Methylcholanthrene" was prepared from a bile acid "deoxycholic acid" by the talented German Chemist Wieland and was shown to be the most potent carcinogenic agent known. Later the distinguished American Chemist Fieser effected brilliant syntheses of both methylcholanthrene and cholanthrene and confirmed their high potency. The comparative facility with which methylcholanthrene may be prepared chemically from deoxycholic acid leads to the possibility that abnormal metabolism of the bile acids might result in the production, *in vivo*, of methylcholanthrene or related compounds. This plausible hypothesis has not received any experimental support up till now.

As to the mechanism of the action of these carcinogenic hydrocarbons not much is known. There are various conflicting theories and the most popular among the lot may be considered here. These hydrocarbons along with others are most readily oxidised photochemically to substances which inhibit oxidising enzymes such as lactic dehydrogenase. For example, oxidised dibenzanthracene inhibits respiration and glycolysis in all normal and malignant tissues according to Prof. Boyland. Serious difficulties are met at once in attempting to construct a unified theory of carcinogenesis which will explain the action of such different agents as radium, azo-dyes, hydrocarbons, dibenzacridine and also by a filtrable virus as claimed by McIntosh. One can of course postulate a

common proximate cause i. e. metabolic disturbance produced by all these agents. The problem is further complicated by the fact that these proliferating cells can migrate to other parts of the body—a process called "metastases". It cannot be over-emphasised that only a beginning has been made towards understanding the mechanism of carcinogenesis.

Regarding the biochemical properties of tumours, one property is unique to them. Tumours show a relatively high oxygen consumption. The study of the Respiratory Quotient (R. Q.) of malignant tumours and normal tissues by Dickens and Simers in the presence of glucose led them to the following conclusion. The R. Q. in normal adult and embryonic tissue is one, which suggests that the respiration is largely due to the oxidation of carbohydrates. On the other hand tumours have a low R. Q., suggesting that non-carbohydrate material is oxidised. Hence, "in tumours it is the power to oxidise carbohydrate that is defective i. e. the inability to bring about normal oxidation of carbohydrate". Research indicates that it is defective respiration rather than high glycolysis that is peculiar to malignant tissues.

A great deal of work has been done to find out qualitative and quantitative difference in chemical composition and biochemical behaviour between normal and malignant tissues. Heiger has found out that certain tumours apparently contained less copper than normal tissues. This may be of significance in relation to the action of copper on certain enzymatic reactions and the powerful inhibition of traces of copper on the growth rate of the cell nucleus, as shown by the pioneering work of Dr. Carl Volgtlin of the United States Public Health Service. According to the work of Bronstein, it appears that malignant tumours are much richer in lipids, especially cholesterol and its esters, and phospholipids. Conflicting claims have been made as to the nature and quantities of reducing substances in deproteinised extracts of tumourous and normal tissues. This aspect of the problem can best be concluded by quoting from the excellent review of Volgtlin: "No conclusive

evidence exists at present which reveals any qualitative difference in chemical composition between normal and malignant tissues. Whatever differences do exist are of a quantitative nature, the biological significance of which is difficult to evaluate".

The last aspect of the problem namely attempts to influence tumour growth has proved less adamant than the others. Results have been obtained by the brilliant band of workers in America, England and Germany which are quite promising. The methods at present known for the treatment of cancer are surgery and treatment by X-rays and radium. Modern researches along these lines of treatment have resulted in saving thousands of lives every year. It cannot be too earnestly stressed that cancer in the early stages, when in accessible sites, is curable.

There is another approach to the question of the prevention of cancer which according to Dr. E. Hurdon is beginning to yield most valuable information and that is the statistical method. He says in a paper read at the Margate Congress "It is of great interest to note that most of the pre-cancerous conditions about which we have knowledge are found in the exposed sites of the body—skin, larynx and upper alimentary track. An analysis of the cancer mortality statistics for the exposed sites has shown that for these sites there is a very considerable increase in the cancer incidence as we descend in the social scale, whereas in non-exposed sites such as the intestines, rectum and deep seated organs, the incidence seems to be same for all classes. It is clearly possible to avoid a large percentage of cancer of the exposed sites by preventive measures aimed at improving the conditions of life, particularly with regard to industrial risks. Cancer of the stomach, one of the most common form in both sexes in Great Britain causes the death of forty people a day; that it is a preventible disease statistical analysis seems to indicate; if so, we may have hopes that means of prevention will be discovered."

Dr. Hurdon has made an outstanding contribution to this pressing problem, especially on cancer in women, more

especially cancer of the uterus and breast, which at these two sites is amongst the most frequent in women and which is also among the most accessible for early diagnosis and treatment. Cancer of the uterus is chiefly a disease of the middle age. Its diagnosis even in the earliest stage is simple. Unfortunately, in a great majority of cases, the disease is very advanced. The delay in diagnosis is not often the doctor's fault. The patient's responsibility is equally great, in the neglect of discharges or irregular or excessive haemorrhage in younger women. Even in advanced cases, radiotherapy offers a cure in a good number of cases. Cancer of the breast occurs in unmarried women as often as in married. Cystic conditions may be present in both breasts or only in one. In all but the early stages the diagnosis of tumours of the breast offers little difficulty. In all doubtful cases, a local removal of the tumour or a local excixion of the breast must be done.

Rats and mice are the greatest human benefactors. It is only by injections and other experiments with them that we have been able to cover vast ground. It was known quite early that treatment with mustard gas or to a less extent cantharidin was antagonistic to carcinogenic agents. It is possible that this antagonism is due to the irritant action of the substances and not to any specific chemical combination. Quite recently, about a few weeks ago, two American scientists, Brickner and Grant, have made a study of a new method of treating animal tumours. Iron in various forms has been employed in other experiments. Because of the peculiar carbohydrate metabolising qualities of malignant tumours, it was decided to administer a combination of iron and sugar such as ferric-gluconate. It impeded the growth of tumours in 12 out of 36 cases. The principle of double injections was also tried. In view of the fact that some animal tumours take up injected dyes readily, it was planned to administer neutral red or azo-blue, *intra-peritoneally*, and to follow the injections with *intra-venous* one of ferric-gluconate. The hypothesis was that the dye might make up a chemical bed in the tumour by virtue of which ferric-gluconate may either be held in quantity or be

made more effective in the tumour. Striking results were obtained. Of 64 animals treated, in 47 cases the tumours stopped growing; in roughly half the cases it receded; cessation of growth always occured in close association with administration of ferric-gluconate. It should be emphasied that it is only the influence of the growth that is dealt with and not a cure.

Fundamental knowledge of cancer, which probably is paving the way for discovery of a chemical means of controlling the disease was reported by Volgtlin at the Cancer Symposium held at the Atlantic City meeting of the American Association for the Advancement of Science. He says, " As far as the need for protein nourishment is considered, cancer cells are just like normal cells. Cancer growth can be stunted the same way as normal growth by withholding certain chemicals, the amino-acids, which are the building stone for protein tissues and without which no tissue, normal or malignant, can grow. The cancer cells need the same kind of materials as normal cells, but it is not yet known whether cancer cells need the same quantities as the normal cells do. *The crux of the problem seems to be that.* The question of distribution of chemicals throughout the whole body must also be considered in searching a chemical cure for cancer. There is no reason why some chemicals cannot be found which would be taken up by malignant cells more than by normal cells".

Some tissue extracts and bacterial toxins have been tried without conclusive results. Recently Dr. Oscar Brunler is creating a sensation by his drugless cure for diseases — "Colour Ray Therapy". By his wonderful method he is able to diagnose cancer at an early stage which is 80% cure. It is hoped that this promising line of attack may yield beneficial results. Suggestive results have also been obtained in attempts made by Maxwell and Bischoff to retard tumour growth by agents known to inhibit tissue respiration i. e., carbonmonoxide, hydrogen cyanide and an exposure to low oxygen tension. It remains to be seen, however, to what extent this positive findings are complicated by disturbance in nutrition.

To conclude with the words of Volgtlin " It is impossible to predict along which lines the greatest future progress will be made, but it would seem that the extension of the work on chemical carcinogenesis, and on the study of the biochemical factors controlling normal and malignant tissue growth is bound to lead in due time to a knowledge of value in the control of neoplastic disease by chemical means. A hopeful sign for future progress is the fact that these proteins are now being treated in a truly scientific spirit — that is to say — with a critical yet optimistic attitude, which recognises that progress in this, as in any other field, is gradual ". At the meeting point of chemistry, biology and medicine lies the solution. Great progress has already been made. Is it too much to hope that eventually in the hands of some inspired investigator the problem may be solved and humanity rid of dreadful curse ?

Even a cursory perusal of research in cancer will reveal to an Indian the hopeless inadequacy of the work done in India. Brilliant bands of workers are making headway in America, Germany and England. One is reminded of the two pictures in Hamlet. It is not so much due to want of talent as due to lack of initiative and encouragement. Emil Fischer has said " the progress of chemical reserach is synonymous with national welfare". Except for notable exceptions like that of H. N. Mukherji of Calcutta, not much work is being done in India. Lady Linlithgow has made a most generous and commendable move towards the alleviation and prevention of tuberculosis. It is for the capitalists of India to follow this magnanimous lead. Funds should be made available for starting cancer institutions where research should be encouraged. Then we may also hope to contribute our quota to the world's fight against this monster.

The Magi

To Nicholas Roerich.

Under the shoulder and crown of the earth,
The Kings are marching towards a new birth,

Nothing dismays them and nothing can stay
Their march growing certain from day unto day.

Onward they lead till the Centre be here,
Timeless, arrayed in the fire of a sphere,

Endless, yet shaped to the rays of a Sun,
Where fire and shadow and centre are one.

And farther than utmost Samarkand,
They circle Asia and enter a land

Where domes of a crystal and shining white
Arise on shafts of a fortress of Light.

The mountains around ascend as a cup,
Tinged mauve like petals and tipped at the top,

The air candescent and white as snow
From diamond fires of the fort below.

And ages and ages have made this place
Aglow with a myriad flames from the face

Of a wondrous Sun, and the mountains shine,
Of sapphire and turquoise: and crystalline.

And porch and rampart vibrate to the sound
Of a luminous ocean of fire profound,

And all the land and its tremulous zone,
Re-echoes the Centre, the Fiery Throne.

II

Under the summits and crown of the earth,
The Kings are marching towards a new birth,

Protected and guided by one great fire,
The fountain and symbol of High Desire.

Despite disaster, eclipse and despair,
And Death like a black moon riding the air,

They quench the anger and turmoil of war
And lead us forward to one white star.

The Flaming Sword, the Sword of the Sun,
The diamond-hilted is with them, alone

They turn the Powers of Darkness with might
Of Fire and Wind and conquer the Night.

And warriors stand around with the fire
Held high like a sacred sign of the Higher,

Seven fires ascending round one great Name
Sonorous, luminous, deathless Flame.

And all the place is aglow like a flower
That burns beyond our life of an hour,

That flames beyond the extent of this zone,
Where fire and shadow and centre are one.

And outward across a listening world
On waves of light and of sound unfurled,

They signal the advent of some New Day
When Hate shall be changed into Harmony.

III

And onward through shadows of Tian-Shan
O'er Pamir and snow white summits that span

The highest dominions, the Kings advance
And marching by will of the stars not chance.

Above them the Banner of Light is born,
Orion opening the gates of the Dawn,

From whence the Beauty of Asia shall rise,
An infinite Beauty to heal the eyes.

And gardens with temples and statues rare,
Are shining again in the morning air,

And sacred mountains are casting the glow
Of a world beyond the world that we know.

Then down the wind comes the sound of a bell
A mystic symbol that all now is well,

And up in the zenith the Seven Stars wheel
O'er a million shining swords—not of steel.

Before them a snow white eagle shall steer,
Invisible, visible symbol, here,

Of some Great Warrior, One who shall bring
The reason of Life and its perfecting.

Under the shoulder and crown of the earth,
The Kings are leading towards a new birth,

With fire and decision they forge the way,
Whereon man marches towards a New Day.

Barnett D. Conlan.

Foundation of Responsible Government in Cochin

The Historic Announcement of His Highness The Maharajah

BY C. S. SUBRAMANIA IYER, *Advocate, Madras.*

THE seventy-sixth birth-day of His Highness the Maharajah of Cochin, falling soon after the opening of the year 1938, marks an epoch in the history of constitutional advance in Cochin State. The affectionate subjects of the Ruler look upon the event as the birth-day of not merely their distinguished sovereign but as the birth-day of Responsible Government in the State, whose foundations were deeply laid in the memorable announcement of His Highness on January 4, 1938 whereby His Highness would hereafter nominate one of the elected representatives of the Legislative Council in the State as Minister for Rural Development with a view to assisting the Dewan in the administration of the subjects of Agriculture, Panchayats, Co-operation, Ayurveda, Public Health and uplift of the depressed classes. His Highness only reserves his right of Prerogative in case the Minister's actions are in the opinion of His Highness, detrimental to proper and efficient administration, to vary or alter the decisions of the Minister. The Minister also will be responsible to the Legislature and will have to vacate office on a vote of no-confidence by the Council.

We have as yet got only the broad outlines of His Highness's policy which we understand will soon be worked out in a concrete form in the shape of a Constitution Act passed by the Government. In trying to evaluate the worth of the privileges granted from the standpoint of democratic Government, we have necessarily to take into consideration three factors. Is Self-Government or full Responsible Government possible in Indian States in view of the Paramountcy of the British Crown? Is full Responsible Government in the form of a broadbased franchise and an elected representative of the people as the Dewan, advisable in the

present state of political advancement and social and religious sectarianism that is still the evil of many states as much as British India ? Is the Cochin State particularly deserving of full Responsible Government being granted immediately, and if granted, will it discharge the heavy responsibility properly ?

The question how far full Responsible Government is possible in any Indian State, has been so well considered by Mr. K. M. Panikker in his treatise on "Indian States and the Government of India" that I need only quote the following lines summarising sufficiently the exact constitutional position :

> If an Indian ruler today decided to establish constitutional Government in his State, he would find that the paramountcy of the British Government stands as an insuperable objection. If a legislature is to be given all the powers which nominally exist in the Ruler it will become vested with the full sovereignity of the state, and automatically the limitations which are now accepted by the Princes as a result of political practice will be scrapped. It is, indeed, obvious that in the ultimate analysis the powers of the ruler can be exercised by the Government of India ; but a legislature cannot be deposed or placed under tutleage The result is that the Government of India can at no time permit the institution of a complete system of Responsible Government within the states, because to do so would be to give full rein to the centrifugal forces inherent in every autonomous political body. To permit each state to have unrestricted government without reserving the authority of the Central Government would in effect be to undo the whole process of unification. The subject of the states, therefore, realise that the solution of their own problem is dependant on the national movement in India.

Thus the claims of paramountcy, of royal prerogative, implications of treaty rights and strategical considerations are the legal bases of the policy of encroachment which have converted the Indian States into an integral part of the imperial polity. Besides these the Government has enunciated the policy of intervention in Indian States, on the claim that the Government affords protection to the subjects from the disastrous effects of misrule and guarantee good Government in the Indian States. The famous letter of Lord Reading to the Nizam of Hyderabad is in point :

> The right of the British Crown to intervene in the internal affairs of Indian states is another instance of the consequences necessarily involved in the supremacy of the British Crown. Where Imperial interests are concerned or the general welfare of the people of a state is seriously affected by the action of its government it is with the paramount power that the ultimate necessity for taking remedial action, if necessary, must lie.

Thus full Responsible Government in Indian States is a misnomer so long as the larger problem affecting British India remains unsolved. Indian States must necessarily march only in proportion to the advance made in British India and it is obvious that India has not yet achieved full responsibility at the Centre by the Government of India Act of 1935.

The Government of India Act of 1935 is framed on the principle of safeguards intended to prevent chaos or confusion or a breakdown of the constitution, by giving protection to the interests of States, the minority communities, the special responsibilities of the Crown with regard to the defence of India and other matters which require careful handling in the transition to a fuller devolution of power.

Though no doubt by virtue of the Government of India Act of 1935, the Instrument of Accession of the Ruler of the State is the primary document defining and limiting the powers and responsibilities of the State and towards the Federal Legislature and has in that sense effected a considerable modification in the old doctrine of paramountcy, yet there are special rights of the Gevernor-General to make laws for emergencies, provisions requiring the State to observe Federal laws and carrying out the executive authority of the Federation, to observe and execute the treaties expressly and impliedly arising out of the terms of the Instrument of Accession, the rights of Chambers to put questions in case of confusion and chaos in Indian States with the sanction of the Governor-General. The Governor-General has special responsibility of protecting the rights and prestige of the Rulers of the States and the duty to prevent grave menace to peace and tranquillity of India as a whole. The Rulers too have similar obligations to guarantee orderly Government.

The Government of India Act (Part II, Chapter I, Clause 6) lays down that an Instrument of Accession may be signed by the Ruler alone but observe the later clause, which says "or any person for the time being performing the

functions of a ruler for reasons of minority of the ruler *or any other reason.*" A construction of the last part of this sentence would lead us to infer that the Government of India Act contemplates a case of full Responsible Government in Indian States at some future time. But it appears by virtue of Section 311 of the Act that if the Government is to be of any other person than the Prince or Chief, for example, if it should be by an elected Dewan or the representative of a fully self-governing State, the person so ruling must be recognised by His Majesty.

Thus we find that however much the Government of India Act might have modified the old theory of paramountcy, and by implications enabled the people of the States at some time to achieve Responsible Government, full Responsible Government is not possible immediately in Indian States for reasons mentioned earlier and hence a solution of the problem of Indian States is necessarily dependant on the progress of British Indian Provinces.

Let us consider the question whether it is desirable to grant Responsible Government to the States at the present stage of their development. Mr. Lionel Curtis in his book " Dyarchy " makes the following observation which is in point:

> It is vital that you should realise how numerous are your friends in all these countries who instinctively believe in self-government for India, but no less important that you should understand what we mean by that term. My own view is fully explained in the " Problem of the Commonwealth ", but to put it in a nutshell, I will tell you of a conversation I had with a very able and responsible friend in one of the Native States. I suggested that a great deal of misunderstanding was due to the fact that the term self-government was used to include two ideas, which were in fact totally separate. 'In this state' I said you have government of Indians by Indians. It is true that you have some European officials who tell me that your government is treating them well. But none the less the Government of His Highness the Maharajah is the government of Indians by an Indian. It is what we might appropriately call 'Home Rule,' if that name had not been assumed by a particular movement. But to show you what I mean by self-government, let me ask you a question. Do you think that His Highness would be well advised to make the two following changes at once? To make his whole legislative council elective? To undertake to appoint as Dewan the leader who commands a majority of votes in the Council, and also to dismiss him the moment he ceased to command a majority?
>
> The most capable Indian administrators I have met are those who have gained their experience in the Native States, which proves the value of

responsibility in training men. Some of them are men of the most liberal views, but I doubt whether any of them would think that so drastic a change can be made at one stroke. I think they would say that a Prince who made such a change too quickly would be likely to throw his state into confusion, and thereby delay its progress towards self-government. He would advise that several intermediate steps should be taken, and I think he would hesitate to name any exact time within which the final change could be brought about.

The conclusion seems to be inevitable that apart from the difficulties, legal and constitutional, local conditions are not quite favourable for the immediate grant of full Responsible Government. The differences in religious views, social habits and practices, claims of minorities and special rights of communities etc. have to be taken into account. Until these things are straightened out, Indian States have necessarily to be content with a moderately wide franchise, a fairly elected majority in the councils and a fair form of association of the representatives in the government of the States. With regard to the State of Cochin, however, though in point of literacy Cochin is the most advanced State in India, there are still many defects that have to be removed and spheres of activity in which the people have yet to be trained. Since 1925 the people have been enjoying some form of consultation in the affairs of the Government by the constitution of the Legislative Council, with an elected majority of 30 and a nominated number of 15, which later was increased to 36 and 18. The voting qualifications were lowered by His Highness and thereby a fairer representation was given to the electorate and added to that the widening of the franchise with regard to panchayats, the constitution of advisory committee etc., gave relief. Several measures of reform outside the Council, the reorganisation of the Secretariat, the opening of the Land Mortgage Bank, construction of new bridges and roads and canals, the settlement of the Harbour question, the opening of the broad-guage Railway from Ernakulam to Shoranur, the electrification of the three important towns in the State, might also be mentioned as indicating the progress made by the State.

The fact, however, remains that the people of Cochin have still to show greater harmony as between community

and community. Factions in local bodies, which culminated in the demand for the abolition of the Municipality itself in a certain place, would seem to indicate that the civic consciousness of the citizens has yet to develop in the direction of running smoothly the administration of local bodies. The Press in Cochin has yet to come up to the level of the Press in British India in the matter of decency and decorum of comment.

These facts point to the need for caution in the matter of giving full Responsible Government immediately, but at the same time a shrewd and capable administrator like Sir R. K. Shanmugam Chetty could not also forget the need for moving with the times. So consistently with the place of Cochin under the British Crown and the stage of political development in Cochin, and also in the interests of ensuring the good and orderly Government of the State, His Highness the Maharajah made the historic announcement of January 4, by which the seeds of Responsible Government have been sown in the State. It is impossible to overestimate the significance of this reform, by which the Minister for Development would not only carry out the administration of certain departments in the State according to the popular will (because he is made responsible to the Legislature) but would also pave the way for the eventual grant of power in other allied departments also.

To the critics of this scheme who say that it savours of Dyarchy which has been tried and found wanting in British India the words of the Dewan are in point. "There is no half-way house between Dyarchy and Responsible Government and once Responsible Government is not possible the present reform alone has to be tried," he said. There are other critics who say the Minister only 'assists' the Dewan and does not 'guide' the Dewan in the administration. But even the Government of India Act does not give any greater power to the Ministers who have only to aid and advise the Governor, and just as the British Indian Ministers do govern and rule nevertheless, there is nothing to prevent a convention growing up by which the Dewan

would carry out the policy of the Minister in practice and Sir Shanmugham Chetty's speeches give one the assurance that this reform would be sympathetically worked. It is also obvious that so long as the Minister discharges his duties properly, the prerogative rights of His Highness will scarcely be exercised. A greater constitutional advance is surely in store for His Highness's subjects if only they work out this reform in the spirit in which it is offered.

The reform introduced by His Highness is particularly significant from the point of view of the All-India Federation. Surely, in a Commonwealth of States and Provinces as a Federation implies there is bound to be mutual invasion of powers and privileges, however much in the initial stages the partners may try to preserve their individuality. But these invasions are necessarily the outcome of mutual adjustment intended for the welfare of the Centre. Whatever disinclination British India may show towards taking Indian States into the Federation, the attitude of the Cochin Ruler towards his subjects has demonstrated that the All-India Federation has to be tried and worked in the same spirit of magnanimity and eagerness for the common welfare. If only the other States follow the noble example of Cochin there will be a Federation of responsibly governed States and Provinces working for the common good of India. Neither the State nor the Province should try to be too selfish in preserving its own individuality and sovereignty but should be prepared to make adjustments as the scheme works. Any right or privilege specially reserved by a State or a Province should be only what is absolutely necessary for its individuality and should be so adjusted as to serve the interests of the whole.

May God shower his choicest blessings on His Highness the Maharajah of Cochin for the good and great reforms he has gifted to the people, and may God extend his munificence likewise to His Highness's able administrator and adviser, Sir R. K. Shanmugham Chetty !

Self-Analysis

THE subject of this sketch is a very interesting personality. Qualified by his university training for the law in 1912, he left that field in the middle of his apprenticing, and launched forth into strenuous ascetic discipline towards the attainment of spiritual culture. He had fallen under the spell of Vivekananda's books as an undergraduate towards the close of the year 1908; his whole being was shaken up under their stimulus and his thoughts and aspirations became revolutionised. He wandered into Northern India in 1914 to live with monks and Sadhus and took the first great step in the direction of self-culture by the practice of self-control and by habituating himself to hardship, and cultivating simplicity in form and spirit. For a period of three years, he engaged himself as a teacher and was in charge of English work for college students. In the middle of a domestic crisis he found himself compelled to resign his appointment, and at the end of it, by a conspiracy of circumstances, he drifted back to the Bar from which he had voluntarily exiled himself, for reasons of soul.

In one sense, no one was less equipped by temperament than he to plunge headlong into law. Yet, he was as good as some of the best exponents of the law in bringing to bear a searching and fearlessly analysing mind on the study of legal problems. His mind moved with precision and exactitude, and he entered into the subtle distinctions underlying legal conceptions with a pure unrelated intellectuall pleasure which lifted up the study of law from its sordidness. It was unfortunate that he did not have the opportunities to choose the metropolis of the Presidency for his venue; he should have found his congenial avocation in that sphere and made his own solid contribution as a scholar-lawyer to the study of legal principles. In the existing situation, he has been exercising those special qualities of mind which according to him enter into the lawyer's make-up, under heavy handicaps.

He does not want to let down the profession in the eyes of clients or of judges. He leans in favour of heavy fees and thinks that owing to our slovenly ways of life, we have been truckling to clients and doing very low accommodations to keep on their good side. He considers the junior-senior relationship, the most chaotic and ill-managed of our Bar-problems, and the self-seeking of the seniors and the timidity of the juniors continues to keep the Bar in its unsatisfactory state. In his view, laxness in the lawyer in the matter of consultation fees is unpardonable and has led to the loss of esteem of the profession. He stands unflinchingly for the protection of the Bar against any invasion of its rights, and is jealous of interferences from the Bench which impress on the Bar any sense of inferiority-complex. But he is equally hard on himself and members of his profession, for any deterioration in standard and quality, for any failure in those civilities which are the hall-mark of distinction for a lawyer, which make their co-operation with the Bench a diminishing quantity; and he looks forward to a time when lawyers as a class will pay equal attention to literature and to law, and make statements which will be models in finesse and accuracy, and he thinks that it is up to the lawyers to bring into their work a solider quality of truthfulness, and save the profession from a reproach summed up in the expression "an honest attorney is a contradiction in terms."

He likewise looks forward to a time when the quality of the judges will improve. Selection by competitive tests should generally be a better guarantee of efficiency than any methods adopted in the past; and direct recruitments from the Bar should relate to those whose reputation and esteem are high. A better generation of judges than those who merely clear off the file by statistical disposals was also to be looked for. When public opinion has a greater control over the acts of officials who are after all public servants, the oddities of many of the judges will lose their offensiveness, and they will remember that they are servants of the public.

But law is not a jealous mistress for him. He would feel himself unfortunate if his devotion to law was exclusive. The capabilities of his mind have drawn him into many fields. His literary studies have been continued without a break, and they keep him in a state of mental health. But he has gradually drifted away from the classics in literature, and more especially from poetry, which was the passion of his early youth, as he thinks poetry in a foreign language is no good job for us. For several years now he has been occupying himself with problem literature, and in that kind, more of the problems of higher life, of health, physical and mental, of good government, of ethical striving, of social cleansing than of bread and butter. He has thought of the several problems of his country along with his studies, and from time to time crystallised his opinions on them and promulgated his solutions of them through varied contributions in the periodicals. At the same time, several questions of human well-being affecting mankind as a whole have been cogitated upon by him and his labours in this line are evidenced by his varied contributions.

The range of the subjects treated of in these papers is vast and from the careful study of these several papers, the reader emerges with the impression that the writer aims at thoroughness and has a great deal of it. He will also have the impression that on most controversial topics, he holds the scales even and after full examination of the pros and cons of the controversy reaches a conclusion which represents a vital synthesis. He cannot resist the impression that a sense of power, of vitalising, dynamic renewal is conveyed through all his works; and that this writer has no use for any writing which is not expressive of something in the nature of immortal convictions; the reader also carries the impression that a sense of style accompanies him in whatever he wants to say, and that he has been modelling for himself a style, the elements of which have been built cheifly from the writings of Emerson of the West, and Vivekananda of the East, his two greatest intellectual Masters, and generally from several other sources.

"Eloquence", says Emerson, "is the best speech of the best soul"; our writer has concentrated his best efforts on securing this quality in his words, although in his own estimation, he has yet to go a long way off to reflect it most fully in his writings. He hopes to become "the best soul," and thereafter "make the best speech".

Two new halls have within recent years been added to the structure of his mind. The first of these belongs to the realm of occult knowledge, namely the study of planetary influences, and the second relates to the department of health and healing. Towards the end of 1930, he marked his revulsion to the professionalism of astrologers, which was synonymous with flattering predictions, by an earnest research into astrology. He studied the Sutra literature in Sanskrit, extant on the subject, the standard treatises of Varahamihira, and Parasara, and lesser works like Saravali, Bhavakuthuhalam, Jatakachandrika, Phaladipika, and Sarvarthachintamani, and with a view to compare the Western writings on the subject studied several of the Books of Alan Leo. After a year of hard study he began to collect horoscopes, and followed the method of going from the known events in the lives of the various natives whose horoscopes were under his examination, to the unknown principle, underlying the particular planetary influences that may have contributed to them. This method yielded to him better results, and he has steadily kept on to it. The horoscopes in his collection run to a few thousands, and several of his spare hours are given to cogitation on them He does not believe that it is useful to predict events that may happen from moment to moment in a man's life. The will power in man, he thinks, will overcome many a planetary influence, and these minute predictions are likely to fail. Secondly, he is of opinion, that enquiry into this province ought not to become a matter of unhealthy-mindedness and curiosity mongering. Nor should interest in this branch of occult knowledge lead to an alienation of life from the larger interests which relate to the soul. But astrology had a certain definite usefulness to all rational minds. The broad land-mark experiences of one's life could be

predicted with tolerable certainty. After all every subject had its own limitations, and it was folly to look for guidance from it which it could not give. It was to him a matter of abiding interest to perceive the wonderful relationship that seemed to exist between earth and Heaven and a certain uniformity, and law and order, into which planetary influences on human life, were resolvable ; nor did he sympathise with that attitude of mind which feared to know the unpleasant future by astrological enquiry, and chose to remain in the seeming security of the present, and he thought *that* happiness not worth the enjoyment which made a man realise that foreknowledge of the unpleasant future should paralyse human action.

Every man was born with some defects in nature which left their sure imprint on character. Very often, he himself remained unaware of them. From a study of planetary influences, he could get at the outstanding facts about himself, and having a clear perception of the defects, could set about remedying them with all the strength he can summon and command. We know generally that the world is divided between those who lift and those who lean, that the former class are a handful, and that the latter are a legion. From planetary positions of these two classes, we can generalise as to the character of the two types. In the nexus of a man's relationship, and in the concerns of his domestic life, it becomes necessary for every man to make certain wise adjustments in his affairs, and the light on them shed by astrology should be of great use to any rational being in whose hands knowledge is power. The subject of this sketch has made more than one such striking adjustment with his insight into matters of astrology. He is investigating the relative merits of the Sayana and Nirayana systems of calculation and hopes to crystallise his labours in this field in the form of a treatise intended to introduce the subject easily to the laymind, and aid the lay reader to apply some of the key solutions of astrology to human affairs. He also believes that Insurance companies would be greatly benefited by subjecting their proponents to the horoscopy test, and that bureaus of astrology

in the hands of practical scholars are the only competent institutions for such test; and he is full of ominous misgivings about the future of this system, if it continues to be investigated and meddled with by mere professionals. Being an occult scheme of knowledge, he takes the view, that opinions on this subject and views on actual horoscopes depend for their validity on the essential truth of the investigators, and that professionals are generally likely to be slippery with their consciences, to be conscious flatterers and unconscious liars.

As regards the second subject, the possibilities that have opened out to him in this line are limitless. He has out of conviction fearlessly accepted a medical system which has made quite an epoch in medical experience. That system is Homoeopathy. His devotion to it is that of a knight Templar to freedom. It is fast becoming the most absorbing activity of his life. In his studies in that realm, he has not spared himself. In its application to Indian conditions he has a feeling of having touched the well-spring of health and happiness. He considers Homoeopathy to be the Kamadhenu of the Indian Home, and in a progressive civilisation and social order which humanity must evolve, he expects the larger acceptance of Homoeopathy in the world. He has been quite taken with it, as it appears to him to be not merely a system of healing, but also a rule and philosophy of life. By his experience in the Homoeopathic healing art, he has convinced himself of the possibility of making salutary changes in character under the action of its infinitesimalised remedies. To the poverty-striken people of India, Homoeopathy should bring a healing halm, truly curative of the ailments of our people, and bestowing on them the rich gifts of healthy mindedness and equipoise of the spirit, and dissolving the complexity of our modern lives. He has seen little ones grown out of their inheritances and unhealthy tendencies by the gentle ministrations of the Homoeopathic healer, and the ailments peculiar to women brought round and themselves better equipped for their duties as mothers and housewives, without any murderous assault on their

delicate frames, in the form of herioc doses of medicine. He knows that its doctrines and principles are apparently difficult for realistic comprehension, and that materially minded people who bulk large, are for the moment scared away from it on account of the infinitesimality of its doses.

When the old philosophy of the Upanishadic seers is more widely understood by a progressive age, and modern science advances farther and farther in the search after truth and principle, and the several points gained in the search become the common property of the cultured classes, Homoeopathy will have a great vogue in the world. Our friend lives in the hope that such a day will dawn for mankind; the doctrines of the chronic miasms regarding the chronic ailments of men, the unitary and dynamic conception of sickness, the centrifugalising process in cure; and the immutable therapeutic relationship which is established between drug and disease, by a system of proving the drug on the healthy, normal individual, have all seemed to him original contributions of Hahnemann to medical knowledge, and the last word on medical wisdom.

He considers that the remainder of his opportunities in life should lie chiefly in the direction of a mighty upheaval effort to scatter this light and knowledge widely among his countrymen and carry its healing balm, by his own hand, to thousands of them. He perceives in this activity of his, a practical realisation of the dreams cherished by him from his Vedantic studies of an earlier period, and believes that by such fulfilment he is escaping from a certain emptiness of the spirit which studies unaided by a course of conduct seemed to bring on him. He also believes that Homoeopathy genuinely studied and practised should bring into the world the noblest freemasonry. It must also be mentioned that he is a thorough-going Hahnemanian, and views with grave concern all innovationists.

(*To be continued*)

—*Aghoram Aiyer.*

Stories from Indian History

Durgavati, the Martyr Queen

BY Prof. V. RANGACHARYA, M. A.

A glance at the political map of the Central Provinces will shew that in the north-western corner of it, covered by the districts of Saugor and Damoh, there is a projection into Central India dividing the latter almost into two halves. To the south or south-east of this projection, across the Bhanrer hills, lie the two districts of Narasingpur in the west and Jubbalpore in the east. Immediately east of Narasingpur and south of Jubbalpore lies the district of Mandla. Touched by Narasingpur in the west and a wedge of Central India in the east, Mandla is bounded semi-circularly in the south by the Seoni, Balaghat and Bilaspur Districts. Both Jubbalpore and Mandla lie in the upper waters of the Narmada river and in the easternmost fringe of the Satpura plateau. In the area stretching from Saugor to Mandla was situated, in the reign of Emperor Akbar, a country called by Abul Fazl, Garha-katanga. It was the only area in the Gond country which saw the largest penetration of Mughal power; and the story given in these pages refers to the harrowing tale of a queen who died in fighting for its independence against the greedy Mughal.

To the west of Jubbalpore, the headquarters of one of the present districts and a place of historic importance, lay Garha, the capital of a petty Gond principality. In Samvat 415 (A. D. 358), a soldier of fortune from Khandesh, Jadu Rai by name, who was in the service of the Haihayabunsi Raja of Lahnji, accompanied his master on a pilgrimage to the source of the Narmada at Amarkantak, married the daughter of the Gond chief Nagdeva who ruled over Garha, and succeeded him on the throne on his death, founding a dynasty which was destined to live for 63 generations, till its extinction about 1781. "When Jadoo Rae succeeded his

father-in-law on the throne," writes Col. Sir W. M. Sleeman,* the famous Commissioner for the suppression of Thuggism, on the basis of an inscription in the temple of Ramnagar built by 'Hir dee sa', the son of Prem Narayan and the 54th of the line about 1667, "when Jadoo Rae succeeded his father-in-law on the throne, he appointed Surthee Partuk as his prime minister, and we have some good grounds to believe, what is altogether singular in the history of mankind, that the descendants of the one reigned as sovereigns of the country for a period of 1400 years up to the Saugor conquest in samvat 1838 or A. D. 1781; and that the descendants of the other held the office and discharged the duties of chief ministers for the same period. Among the sovereigns during this time there are said to have been 50 generations and 62 successions to the throne; and among the ministers only 40 generations. This would give each reign something less than 23 years. In 1260 years France had only 63 kings, or one every 20 years."

In the time of Gopal Sa,[2] the 10th of the line, the territory of Mandla, about forty miles to the south-east, was added to Garha by conquest from certain Gond chiefs who had succeeded the Haihaibunsi Rajas. The Garha-Mandala dynasty, however, was obscure and limited in power, till the time of Sangram Sa, the son of Arjan Singh and the 48th of the line[3], who ruled from 1480 to 1530. Sangram Sa inherited from his father only three Garhs or districts; but obtained, by his valour and by the close of his reign, dominion over 52 districts which included 32280 villages in the area comprised by "Saugor, Damoh, and possibly Bho-

* Sleeman's account is reproduced in Prinsep's *Useful Tables* (Edward Thomas Edition, pp. 261—4.) It was based on an inscription at Ramnagar (east of Mandla), which was dated on Friday, 29 Jet, Samvat 1724 (A. D. 1667) in the reign of 'Hirdee Sa' and "written by Suda Seo, at the dictation of Jygobind Bajpae, and engraved by Sing Sa, Dya Ram, and Bhagi Rutee.' (Jygobind Bajpae = Jay-govind Bajpai; Dya Ram = Daya-ram; Bhagi Rutee = Bhagirati)

2. Cunningham places Jadu Rai about 664 and Gopal Sa accordingly at a still later period than that attributed to him in the Ramnagar inscription.

3. In a recent contribution to the *Hindu* Mr Bhabani Bhattacharya mentions Amandas in place of Sangram Sa. He describes Amandas as a man with ignominous character. As a youth he is said to have been crafty and wicked, and murdered his father for his choosing a younger son as his heir

pal, the Narbada valley, and Mandla and Seoni on the Satpura highlands'.' (*Impl. Gazr.*, 1908, Vol. X, p. 13). The petty chief of Mandla was now ruler over a fairly extensive area which touched the Mughal Suba of Malwa in the west, and the easternmost of the triple principalities of Chhindvara Betul and Chanda which also existed then in the Satpura hill-country.

The control of the Garha-Mandla kings over their extended principality, however, was, as the author of the *Imperial Gazetteer* observes, short-lived on account of the Mughal menace. About 1530 Sangram Sa was succeeded by his son Dalapat, regarding whom the voice of scandal has given by no means a flattering picture. The story is that Sangram Sa had no son ; that peace and restfulness became strangers to him on account of the void ; that, as every moment his heart stretched out at the absent heir with a cry of longing, he clutched at a substitute, and, calling a servant of his, induced him to hand over his infant son to be brought up as the prince and heir! Whatever might have been the truth, Dalapat Rai was not equal to the burden of administering a difficult country placed on his shoulders. He lacked both firmness of mind and beauty of form, and scandal said that it was not surprising that he was not a fairy prince! But Dalapat was lucky, and he got for his bride a lady of whom the Kshatriya of the finest blood could be proud. Princess Durgavati, the daughter of Raja Salivahan, a petty chief descended from the ancient and illustrious line of the Chandellas of Mahoba, was a true ornament of her sex. Her father was a proud man, proud of his clan and descent, and in days of prosperity would have spurned the hand of the Gond, inferior as he was in social rank, but he had fallen on evil days, and he was not in a position to deny the high position offered to his daughter. Thus it was that the Gond palace and country came to have a queen in every sense of the word ; and if Dalapat ever heard words regarding his parentage which set the blood of shame flutter in his cheeks, of which of course we cannot be sure, he was indeed in the world of elysium in the company of his life-partner.

As for Durgavati she forgot her social pride, and identified herself heart and soul with her husband. Suppressing all her individuality, she ministered to him, and made him forget his inferiority to her. By her behaviour she made him think that she was more a complement to him than a superior being, and he forgot in her love that she was the pedestal on which he leaned.

But Providence was not for giving Durgavati even this limited happiness. After a rule of 18 years Dalapat closed his earthly career, leaving a four-year-old son, Bir-Narayan, to continue his line and rule. And Durgavati became, under the circumstances, regent and ruler. The world then came to realise her greatness. Forgetting that her marriage had been but an interlude, an accident, in an unhappy life, she devoted herself to the service of her son. Refusing to sink into herself in protest to the cruelty of life and love, she clutched at the mother's pride and privilege, and carried on the administration for her son. If she could not find happiness within the portals of married life, she *would* find it in the duties of the royal office, and of a true mother to her son and her subjects. If marital happiness within the palace was denied to her, she would snatch the affection of the people of her adopted country by her solicitude to them. Such was her divine resolve.

The result was a glorious period of plenty and prosperity for the Gond country. No less a writer than Abul Fazl gives an unlimited eulogy on the heroic queen. He says that she did great things by dint of her abilites. Many a time had she engaged the king of Malwa, Baz Bahadur, and discomfited him. Her army included 20000 horses * which were famous for their efficiency, and a thousand elephants which were a terror to her enemies. Subduing all the turbulent chiefs of Garba-katanga, she compelled them to lay down their accumulated treasures at her feet. Personally she was still full of sap, and the youth seemed to rise insistent in her in the face of all her

* If Abul Fazl is true when he says that the Gonds were a wild race dwelling in the wilds and passing their time in eating, drinking and procreation, the achievement of Durgavati in transforming them into fighters must be regarded as remarkable.

years of sorrow and stress. "She was," says Abul Fazl, "a good shot with gun and arrow, and continually went a-hunting and shot animals of the chase with her gun. It was her custom that, when she heard that a tiger had made his appearance, she did not drink water till she had shot him" (*Akbarnama*, II, p. 325). Animated by the fire of self-examination, she preferred a life of usefulness to one of pleasure, and she filled the different parts of her kingdom with works of utility which made her name mentioned with love and gratitude by her subjects. And even today, in every part of her kingdom, we come across the landmarks of her selfless rule, landmarks which have lived in the teeth of time and ravages, at the sight of which memory flashes across a picture of one of the most lovable figures of history.

But Durgavati was not destined to live and continue her noble work in peace. Emperor Akbar had just got rid of the clique which had kept him in leading strings, and launched himself into that career of ruthless imperialism which saw the scattered political units of the land once again moulded into a united empire. Akbar's high ideals are apparent more in the administration of a conquered kingdom than in the method of its conquest. A ruthless empire-builder, he hardly allowed justice to enter into his mind when a country had to be attacked and subjugated for the sake of his empire. Tradition says that the emperor sent a golden utensil to Durgavati, hinting that a woman's duty was in the home and not on the throne, and that she, stung by the insult, sent in return a *pinjan* suggesting thereby that he was fit to be a cotton-cleaner. Akbar saw in this not a defence of birth-right or independence, but only an obstacle to imperial consolidation. He was not the man to allow his political dream to be destroyed by a woman, however justified she might be from her own stand-point. He never clothed his acts with the veil of ethical prudery, and, with a smile of self-confidence, he issued the cruel order for invading the Gond country which, says the *Tarikhi-Alfi*, had never been conquered by any ruler of Hind since the rise of Islam. Khwaja Abdul Majid Asaf

Khan, the Governor of Kara and the eastern provinces, who had already reduced Raja Ramchand of Panna, famous for its diamond mines, was now ordered to march his troops into Durgavati's dominions. An army of spies in the guise of merchants prepared the way for more vigorous action, and an overwhelming array of Mughal troops soon devastated the country.

Taken unawares, Durgavati had to choose between capitulation and independence. But she did not hesitate. She heard the voice of the country calling to her. Every inch of it was dear to her as holy soil; every tree or shrub in it a precious possession, and every creature in it a being to be protected and cherished. No finer music existed for her than the wind of its trees, no finer attraction than the magic of its fields and shrines. The blood of such a woman could not but turn to white heat at the Mughal's aggression and cruelty. The smiles of feminine softness gave place to wrinkles of indignation, and, far from drifting with the tides, she made the biggest decision of her life in choosing the horrors of war rather than submit to the dishonour of subjection,

But fates were not kind. Justice and victory did not go together. Near the fort of Singor-garh in Damoh the queen met the invaders, but was overpowered by odds. Alarmed and cowed, the Gonds proved unequal to the struggle, and deserted their queen and defender. Reduced to great straits, Durgavati retired southwards past Garha towards Mandla and, mustering 5000 troops again, made a desperate stand against the heavy odds of the enemy in a narrow defile. Mounted on her elephant—the story is that Akbar had vainly asked for it—she goaded her troops by her address and example. By 5 P. M., more than 300 Mughals were killed, and still the struggle was indecisive. Undismayed, Durgavati urged her chiefs not to rest but to take a strategic hill in the neighbourhood which the enemy, she pointed out, might occupy, to their great danger. Her words of wisdom fell on deaf ears, and Asaf Khan took advantage of the delay to occupy the hill and strengthen it with his guns. Nothing daunted, the Rani launched a second

attack. The combatants were so eager that guns and arrows were rendered useless and they came to grips in hand-to-hand struggle. Till 2 o'clock the unequal battle raged, and the imperial forces were hurled back. But just at this stage the Mughal guns began to make havoc, and to her unendurable sorrow the queen saw her son Birnarayan reel under a wound. She had him carried to a line of safety, but this thinned her line of defence; and, thanks to a persistently cruel fate, an arrow from the enemy's ranks struck her eye at this moment. With more than human endurance she pulled it out with a firm hand, but it broke, and a part stuck to the eye, symbolising her broken fortune.

To make matters worse, retreat was cut off from the back as a stream in her rear, which had been dry at the beginning of the battle, became all at once flooded and unfordable. Fire in front, water at the back, the Gonds writhed under the lash of a hopeless situation, and began to waver. Face to face with a tragedy of the worst type, Durgavati was approached by her faithful mahout with the proposal that she should flee across the stream for safety. But Durgavati was not for deserting her ranks. She would die a queen amidst them rather than live elsewhere as a coward! And as if to mock human helplessness, the god of death sent a second arrow which struck her neck, on extracting which she fainted. Regaining consciousness, Durgavati realised that freedom from the black shadows which overwhelmed her crown and kingdom was possible only with the sacrifice of her life. Appealing in vain to be stabbed by her minister, she snatched a dagger unexpectedly from the hands of her mahout, and plunged it into her heart. Her kingdom might be dragged down to the depth of slavery, but she would never live to witness it. The tragic beauty of a young, noble, vigorous life ceased for ever.

The fall of the queen was hailed with joy by the victors, and they resumed their onward march. Pressing on towards Chauragarh, the treasure city of the dynasty, in the fortifications of which Birnarayan had resolved to

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make a determined defence, they launched an attack two months after their first victory. Finding after a time that further defence was impossible, Birnarayan ordered his two faithful servants, Bhoj Kaith and Miyan Bhikari Rani, to collect wood, cotton, grass and ghee for a *jauhar* of the ladies, so that they would not fall into the hands of the enemy. The two men carried out their grim task with singular thoroughness. "Whoever out of feebleness of soul was backward," says Abul Fazl, "was in accordance with their custom put to death by the Bhoj aforesaid. A wonderful thing was that, four days after they set fire to that circular pile, and all that harvest of roses had been reduced to ashes, those who opened the door found two women alive. A large piece of timber had screened them and protected them from the fire. One of them was Kamalavati, the Rani's sister, and the other the daughter of the Raja of Puragadha, whom they had brought for the Raja Birnarayan but who had not yet been united to him." Abul Fazl observes that the two women obtained honour by being sent to kiss the threshold of the Shahan Shah, that is, were forced to become the inmates of Akbar's harem; and the luxuries of the new life, we may suppose, drowned the sorrows of their fall and dishonour, and sobered them into the slaves of the harem.

As for Bir-narayan, he had now no reasons to live. He fell fighting, and the fort came into the hands of the storming imperialists. The Muslim chronicler gives a list of spoils too incredible for that poor and rough country. Besides a thousand elephants, "there fell into the hands of Asaf Khan and his men an incalculable amount of gold and silver. There were coined and uncoined gold, decorated utensils, jewels, pearls, figures, pictures, jewelled and decorated idols, figures of animals made wholly of gold, and other rarities." The coin included a set of hundred large pots of the gold *ashrafis* of Alau-ddin Khilji. "It is surprising," says Vincent Smith, "that the ruler of a country so wild as Gondwana, or Garha-katanga as the Persian authors call it, should have accumulated such a rich treasure. The historian of Indian art would be glad

if he could see a specimen of the pictures, examples of Hindu pictorial art between the seventh century and Akbar's introduction of Persian fashions about 1570 being almost wholly lacking." (*Akbar*, p. 72).

The Mughal's rule over the Gond country commenced, though it was limited and precarious, and the Garha-mandla line, like other contemporary ones, continued to exist, as has been already said, till the close of the 18th century. But to the people of the region who had in subsequent times a full experience of all the evils of the Mahratta ravages and other vicissitudes, the memory of their great and good queen is still dear. The day of her fall is still bitter and unforgettable to them; and it must be apparent from what has been said that even the hostile Muslim, with his heart of stone, has given, regarding her, a story which cannot be read without a sense of injury at the undeserved tragedy which was meted out to one whose only crime was the love of her land and people. A heroine whose whole being was pervaded by a beauty and colour which it is impossible to adequately express in word-painting, Durgavati remains a perfect divinity, in whose story of heroism and tears, there is ample room for philosophising on human helplessness.

The Scholar Science Corner.

By B. H. IYER, M. Sc., A. I. I. Sc.

TWENTYFIFTH INDIAN SCIENCE CONGRESS (1938).

The Silver Jubilee Session of the Indian Science Congress Association was held jointly with the British Association for the Advancement of Science, in Calcutta—where the Congress was first inaugurated in 1914—from 3rd to 9th January 1938, both days inclusive. Their Excellencies the Most Honourable Lord Victor Alexander John Hope, K. T., P. C., G. M. S. I., G. M. I. E., O. B. E., D. L., T. D., The Marquess of Linlithgow, Viceroy and Governor General of India, and The Honourable Lord Cecil Marcus Knatchbull-Hugessen, G. C. I. E., M. C., Baron Brabourne, Governor of Bengal, were the distinguished Patrons and Sir James H. Jeans, D. Sc. Ll. D., Sc. D., F. R. S., was the President of the Jubilee Session. The Session was unique in that it was the first occasion when a learned foreign society of the standing of the British Association held joint scientific deliberations with an Indian organization. Over a hundred foreign scientists, mostly members of the British Association, attended the Session and activated its proceedings. It was proof positive that in matters scientific too, the West has begun to recognise the recent awakening in the Eastern Empire. Shall we not cherish the hope that this joint meeting would be the stepping stone, leading to more and more of scientific union between India and the outside world ?

The very lamentable death of Lord Rutherford, the President-elect of the Jubilee Session and of Sir Jagadis Chunder Bose—the great Indian scientist—on the eve of the Congress Session, had cast a gloom in the scientific world. But the availability of the former's written posthumous address to the Session which was read out by Sir Jeans after his inaugural address, gave the right impetus to the entire deliberations. It seems that Lord Rutherford was looking forward with so much eagerness for this Joint Session that he had got his Presidential Address ready months early. Although these two great personalities in science are no more with us in flesh and blood, may the scientific spirit that they infused into the world live for ever with increasing vigour !

The Local Reception Committee under the Chairmanship of Mr. Syamaprasad Mookerjee, Vice-Chancellor of Calcutta University, are to be warmly congratulated for having done everything to make the Jubilee Session the grand success that it was. The well earned congratulations are due to the Indian Science Congress Association for having completed a quarter of a century of useful work and thus brought about a scientific renaissance in India.

There was a record audience at this Session, the membership alone having mounted over 1600. In fitness of things, the programme for the Session was fully packed indeed. Presentation of original papers—over 800—, holding of discussion on topics of scientific and industrial importance—32 in all—, visits to places of interest, social gatherings and popular lectures were the items on the programme.

The introduction of a large number of discussions is a welcome change. It might even be suggested that the Science Congress Association should hereafter discontinue reading of original papers at the annual Session and should, instead, only hold discussions and symposia on subjects of fundamental importance, both to science and to the country. Three primary reasons for making such a suggestion are as follows. (1) A large and increasing number of abstracts of work done, of work in progress and of work programmed to be done, are usually published and only a meagre fraction of them are read. (2) There are already in existence in our country a sufficient number of Societies catering for the needs of different branches of science to whom the receiving and recording of the abstracts of papers on original work could be conveniently relegated. (3) The time allotted for discussions at present is quite insufficient and nothing good can come out of "condensed discussions"-- if such a phrase may be used for concentrated ideas hastily propounded during the course of five-minute-talks.

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Viceroy's Opening Address.

H. E. the Viceroy in his opening address paid a tribute to Sir Ashutosh Mukherjee, the distinguished educationist and the first Chairman of the Congress Association, to the late Lord Rutherford and to Sir Jagadis Chunder Bose. Commenting upon the work of the Indian Science Congress Association, His Excellency said:

No one will deny, I think, that the Association, with its annual meetings at various centres throughout India, has done work of the utmost value in the impetus which it has given to scientific research throughout the

country, and in the assistance which it has lent, by stimulating close and constant collaboration between scientific workers, in the rationalizing—if I may use a convenient word—of scientific work in India and the elimination of the risks of mutual ignorance and needless duplication of effort.

We are entitled, I think, to feel that the future of science in India is full of encouragement. India has demonstrated beyond question that she possesses men of capacity, with the will to labour; and if in this country we have workers prepared and equipped to take their place amongst those who to-day in every continent are engaged, whether in pure or applied science, in advancing the frontiers of human knowledge, it is very evident that India affords limitless opportunities for the harnessing of that knowledge for the betterment of mankind.

By universal accord, the first and foremost object of our endeavour in the material field must be to better the lot of the agricultural population, to raise the standard of living of the cultivator. Success in that endeavour is the criterion by which all efforts must ultimately be judged.

Talking about the place of scientists in the ' Changing India ', the Viceroy said :

It may be argued that scientists, of all people, are those who can help least in this respect, since scientists speak a universal language, and science is science the world over, But—and I speak with diffidence as a layman—when talking of countries and their civilizations, it is difficult to dissociate a scientist from the background against which he works and from the effect of his work on the development of his times.

The scientist has his place not only in the world of science but in society as a whole. The backgrounds against which scientists in India and the West pursue their activities are vastly different, and the possible effects on society from the impact of their discoveries on everyday life must inevitably vary. But that difference in no way diminishes the value to us in India of the informed interest, of the advice, and of the wide and varied experience, of those who have seen the possibilities and limitations of scientific activity in other spheres.

* * * *

***The Inaugural Address*:**

After paying a glorious tribute to the late Lord Rutherford and his scientific achievements, Sir James Jeans said :

The quarter-century of your (Indian Science Congress Association) existence has been a period of stupendous developments in almost all branches of science. and certainly not least in those which have formed my own field of work. Twenty-five years ago the astronomers were still debating as to whether the great spiral nebulae were inside the galactic system or outside ; estimates of the distances of these nebulae differed by factors of at least 100, and the vast universe of extra-galactic astronomy was still closed territory. The genius of Einstein had already given us the restricted theory of relativity—the simple physical theory which grew out of the Michelson-Morley experiment—but the more complex gravitational theory was still unborn, and we were still perplexed by its puzzles as to whether the universe was finite or infinite, and whether space and time were real or unreal. In physics, Plank had given us the rudimentary

quantum-theory which was required by the phenomena of black-body radiation, but its application to atomic physics was yet to come. Rutherford's epoch-making contribution investigation on the scattering of alpha particles by atoms had just, but only just, shown us the atom as we see it to-day—the heavy nucleus with the cloud of light electrons surrounding it. Bohr immediately seized upon this concept and developed it further; he shewed how the quantum theory could be applied to the movements of this cloud of electrons, and made it yield an interpretation of atomic spectra. On this basis were built the old quantum theory and then the far vaster structures of the new quantum-theory and the wave-mechanics. Finally the new science of nuclear physics came into being, largely as a personal creation of Rutherford; his very last utterance on this subject was written especially for you, and in a few minutes I shall be reading it to you.

Nor has India stood idly by as a mere spectator of this most thrilling period in the history of science. These twenty-five years have not only seen your association increase from infinitesimal beginnings to its present international importance; they have also seen the phenomenal growth of India as a scientific nation. In 1911 there were no Indian-born fellows of the Royal Society; to-day there are four. In 1911 the Royal Society published no papers by Indians, in 1936 we published ten. Yet statistics are dry things, and even those which show an infinity-fold increase convey a less vivid picture than a few concrete examples, such as each of us can find in abundance in his own subject. The mathematicians and physicists will probably find their thoughts turning, as mine do, to the strangely intuitive genius of Ramanujam and to the remarkable discoveries he had made in pure mathematics before death snatched him prematurely away; to the work of Sir Venkata Raman in physics, and especially his discovery of the effect which is known by his name all the world over; to many investigations in sound and the theory of music made by Raman and a host of others; to the work of Saha in astrophysics, which gave us our first clear understanding of the meaning of stellar spectra, and so unlocked the road to vast new fields of astronomical knowledge; and to the work of many Indians, among whom I would specially mention Chandrasekhar and Kothari, on conditions in the interiors of the stars. And I am sure that not only the mathematicians and physicists, but workers in all other fields as well, will be thinking with admiration of the remarkable ingenuity and experimental skill shown by that great Indian scientist, the late Sir Jagadis Chunder Bose.

* * * *

General presidential Address (posthumous):

In the early portion of late Lord Rutherford's address, acknowledgement is made of the fruitful labours of the various official scientific services initiated and maintained by the Government of India; for example, the Survey of India, the Geological Survey, the Botanical Survey, the Departments of Agriculture and Meteorology and many others. A tribute is paid to the work done in the various Universities in the country and to the work done by the distinguished scientists like Sir Venkata Raman, Prof. M. N. Saha and Prof. B. Sahni, the three F. R. S.'s in India to-day. Regarding the need for research in applied science, late Lord Rutherford has observed:

"While I cannot lay claim to have any firsthand knowledge of Indian industries and conditions, yet perhaps I may be allowed to make some general observations on the importance in the national interest of a planned scheme of research in applied science. If India is determined to do all she can to raise the standards of life and health of her peoples and to hold her own in the markets of the world, more and more use must be made of the help that science can give. Science can help her to make the best use of her material resources of all kinds, and to ensure that her industries are run on the most efficient lines. National research requires national planning. If research is to be directed in the most useful direction, it is just as important for a nation as for a private firm to decide what it wishes to make and sell. It is clear also that any system of organized research must have regard to the economic structure of the country......

The address next contained a survey of the post-war scientific and industrial development in Great Britian. He has said :

It is however, to be borne in mind that a great part of British Industry is carried out in small establishments. A survey carried out some years ago indicated that in 128,000 factories in Great Britain less than 500 employed more than 1000 workers while over 117,000 employed less than 100 workers. Obviously such small factories are not in a position to maintain a research laboratory on anything but a small and inefficient scale. To overcome this difficulty, the Department (The Department of Scientific and Industrial Research formed in 1915) in conjunction with industry instituted a number of co-operative research associations repersenting the greater part of the main industries of the country. Each of these research associations is autonomous and controlled by the representatives of the industry concerned, and is financed by contributions from the firms belonging to the association, assisted by grants from the Department.

The latter half of the address dealt with a masterly review of the successive stages of the growth of our knowledge of the subject of "Transmutation of matter". The following are a few extracts from that portion of the address.

Towards the close of the 19th century, when it seemed certain that the atoms of the elements were unchangeable by the forces than at our command, the discovery was made which has revolutionized our conception of the nature and relations of the elements. I refer to the discovery in 1896 of the radioactivity of the two heaviest elements uranium and thorium. It was soon made clear that this radioactivity is a sign that the atoms of these elements are undergoing spontaneous transmutation. At any moment a small fraction of the atoms concerned becomes unstable and breaks up with explosive violence, hurling out either a charged atom of helium, known as an *alpha-particle*, or an electron called in this connection a *beta-particle*. As a result of these explosions, a new radioactive element is formed and the process of transmutation once started continues through a number of stages. Each of the radioactive elements, formed in this way, breaks up according to a simple universal law but at very different rates. In a surprisingly short time, these successive transformations were disentangled and more than 30 new types of elements brought to light while the simple chemical relations between them were soon made clear.

........to bring about the transmutation of an atom, it was necessary in some way to alter the charge or the mass of the nucleus or both together

Since the nucleus of an atom must be held together by very powerful forces, this could only be effected by bringing a concentrated source of energy in some way to bear on the individual nucleus. The most energetic projectile available at that time was the *alpha-particle* spontaneously ejected from radio-active substances. If a large number of *alpha-particles* are fired at random at a sheet of matter, it was to be expected that one of them must occasionally approach very closely to the nucleus of any light atom in its path. In such a close encounter, the nucleus must be violently disturbed, and possibly under favourable conditions the *alpha-particle* might actually enter the nuclear structure, resulting in a transformation of the nucleus.

The study of the transmutation of elements by using accelerated *protons* and *deutrons* as bombarding particles has given us a wealth of new information. The capture of the proton or deutron by a nucleus leads in many cases to types of transmutation of unusual interest. For example, the bombardment of the isotope of lithium of mass 7 by *protons* leads to the formation of a beryllium nucleus of mass 8 with a great excess of energy. This immediately breaks up with two *alpha-particles* shot out in nearly opposite directions.........

" It may well be that in course of time such artificial radioactive elements may prove a useful substitute for radium in therapeutic work. By these methods also, such intense sources of *neutrons* can be produced that special precautions have to be taken for the safety of the operators of the apparatus.

Book Reviews.

The Story of Indian Civilization By C. E. M. Joad. Published by Messrs Macmillan & Co., Price Rs. 1—8—0.

This nice little book is not a full-length history of India; rather it is a "close-up" of important aspects of Indian History from the point of view of a pacifist and internationalist. The clang of arms and the stink of blood are, therefore, absent from it. So, too, are marches and sieges and instead, we find the story of the march of the human mind under Indian skies and the quest for the solution of the Great Problem. It is, in the words of Dr. Brajendranath Seal " the story of a great co-operation between North and South, between East and West, between Aryan and Dravidian, between civilised and jungle man, for a great consummation........." Mr. Joad has told this story lucidly and well in about a hundred and fifty pages—a very difficult task indeed !

There are six chapters in the book—(i) Sketch of Indian History. The Mingling of the Races (ii) the Search for Truth and Perfection. Philosophy and Religion, (iii) The Search for Beauty, (iv) The Search for Expression, (v) The Art of Government, and (vi) The Impact of the West. After briefly sketching the course of Indian History, the author gives us, in the second chapter, a clear account of Indian Philosophy. All the chapters bespeak the author's mastery of his subject. His discussion on the caste system is especially interesting, where he points out that the caste system is the result of the application of the principle of unity in diversity to the social structure. The distinctive features of Indian Art are described in Chapter III and those of Indian literature in Chapter IV. In the last chapter are summarised the results of the impact of the West. The author sees the problem of Indian civilisation as that of "learning to use, even to invent, the comforts and amenities of life without being enslaved by them, to take from the West its gadgets without its pathetic inability to see beyond them."

There are certain minor inaccuracies in the book. Also greater care has to be taken in printing Sanskrit names, for example, Lakshana for Lakshmana and the incorrect splitting of 'Malavikagni-mitra'. The story is told with great sympathy and understanding. The author's clarity of outlook and lucidity of expression are commendable. The book deserves to be widely read. *S. V.*

Public Finance. By Prof. Krishna Kumar Sarma, M. A., B. Com. Published by the Bangalore Printing and Publishing Co., Ltd., Bangalore. Price Rs. 3.

It has been well said that democracy calls for a higher level of general knowledge in the masses than is necessary under other forms of political organisation. While the progress of India, however tardy it may be, is towards democracy, the ordinary Indian is sadly ill-informed in the principles and practice of public finance. The formulation of financial policies from the dizzy heights of Simla or Delhi has been symbolical of the commoner's remoteness from such things. He has regarded these as beyond his understanding. Nor has there any systematic effort been made to educate him in this matter. Prof. Sarma has, therefore, done a good turn by the lay man in publishing this book.

The book is divided into two sections. The first contains a lucid exposition of the general principles of public finance and the second gives a critical history of Indian Finance, in the light of these principles.

The great Frenchman, Colbert, once defined taxation as "the art of so plucking the goose as to secure the largest amount of feathers with the least amount of squealing." The British government has not proved any very nice-fingered in the process and has not cared very much about the squealing. Prof. Sarma narrates this story from the time when the British government first laid its hands on India. The first chapter in the second section is devoted to a description of the system of public finance in India, and in subsequent chapters, the reports of various Committees on Indian finance are analysed. Layton's Report, the Reports of the Percy and Davidson Committees,. the recommendations of the Joint Parliamentary Committee, and Sir Otto Niemeyer's Report are all treated in separate chapters.

The chapter on the Indian Public Debt is well-written. The external debt of India, in raising which "the agent of the borrower was the lender himself", the absence of a well-planned national debt redemption scheme, the influence these external loans have over the rate of exchange and the level of prices—all are adequately discussed. To the general reader, the chapters on Financial Administration, and Indian Budgets will be informative. The Indian is the most heavily taxed in the world. What matters is not, of course, how we are taxed but how the revenue is spent. The greater part of our revenue is sliced off by the military and the services so that very little is left for promoting the efficiency and productive capacity of the people. These chapters amply bear out these remarks. The financial implications of the separation of Burma, Recent tendencies in Indian Fiscal Policy. Railway Finance, and Local Finance are other chapters of the book which prove the author's mastery of the subject.

The book supplies a long-felt want in that it gives within 300 odd pages all the information, by way of fundamental principles and historial facts, required for the general reader. We congratulate the publishers on this well printed and well got-up volume.

S. V.

History of European Political Philosophy By D. R. Bhandari, Published by The Bangalore Printing and Publishing Co., Pp. 397, Price Rs. 4-8-0.

A history of Political Philosophy is an integral unity in spite of the apparent differences in the view-points of the various thinkers. The problems are always the same though the solutions are not always so. The function of the history of Political Philosophy is to set forth the successive philosophies in their proper sequence and proportional relationship. Along with this, a clear presentation of the evolution of political thought through the centuries, is also a necessity.

The present book, in the words of the author, is an Introduction to the History of European political philosophy. It is a clear and precise presentation of the European political thought from the Grecian City-State down to the present century where, apart from an almost worn-out democracy, we have Fascism and Bolshevism vigorously competing with each other for supremacy. Prof. Bhandari has laid the student world under a deep debt of gratitude in publishing this text book. The chief tenets of the different thinkers have been clearly summarised and a perusal of the book convinces us of the author's comprehensive knowledge of the subject. The author has adopted a chronological standpoint and on the whole it seems to be better than a topical order. It must however be

pointed out that the treatment of the topics suffers from an excessive and almost painful analysis which reminds us forcibly of the college class-notes. Individual thinkers and systems receive such an analytical description that the reader of the book is likely to forget the central unity running through the various phases of political thought. No serious attempt has been made to synthesise the different strands into a coherent and orderly whole.

One would also desire that the treatment of the medieval period was more general and less detailed than what it is now. Seeing that the book is essentially an Introduction to an advanced study of the subject, it is not clear why every clerical scholar who had something to say about political science must have a place in the book. Political philosophy is not always a progressing forward. Often it takes retrograde steps and these do not require the serious attention of the novice. The book becomes distinctly interesting from the Social Contract onwards and glides smoothly on to the present epoch. The brief review of the various tendencies in recent political thought is specially striking as it gives us a lucid account of the contemporary views. The last chapter is devoted to the two recent and clashing types of political thought—Fascism and Communism.

The style adopted is simple and straight and it never degenerates into the obscure, or the pedantic. The facts are well-arranged and but for the defects pointed out above, the book is very well written and should prove of immense use in the hands of the students of political philosophy. A happy and useful feature of the book is the bibliography at the end of each chapter.

S. R.

I. Agni and other Poems and Translations II. Essays and other Prose Fragments By C. Subramania Bharati. Published by Bharati Prachuralayam, Triplicane, Madras.

These two tiny volumes contain, as their title indicates, the miscellaneous writings of Subramanya Bharati, the patriot poet of Tamil Nad, and they comprise devotional poetic pieces, lyrics, religious and Vedantic songs, prose pieces, and short essays on social and political and other allied matters. There can be but few in the Tamil Nad and the neighbouring province of Kerala who have not been inspired by Bharati's writings, especially his national songs. His works show that he had long before the present agitation foreseen what shape our activities should take. He puts forth love of country above everything else. People have to forget that they belong to particular religious persuasions or castes or other divisions. It is the feeling of oneness that they belong to one country that makes the people forget other differences and goads them on to strive for the attainment of national freedom. Besides the thrilling patriotic fervour Bharati had that devotion to the Supreme, that he, like Ramakrishna, contemplated on Him in His varieties of forms, some times in the form of the beloved, sometimes in the form of the mother, sometimes as the father, and sometimes as the teacher. His Sri Krishna was sometimes a beloved monarch, sometimes a servant, sometimes a friend and at other times a play-boy. Bharati was a believer in the freedom of women as well.

The one great merit of his writings is their simplicity. Unlike the great Tamil works as Silappathikaram, Manimekalai etc. his writings do not require any commentary. They appeal to the learned and the uninitiated alike. He is the torch-bearer of a new kind of Tamil Kavyas and is the father of a renaissance in Tamil.

Dr. C. R. Reddi and Mr. Venkatramani point out in an appreciative foreword the contribution of Bharati to the creative side in song and literature. The writers of the foreword justly remark that " the authentic

Bharati quality, racy and indigenous, persists even in this collection of poems and essays in a foreign language. When a poetic soul like Bharati's, happy beyond dream in his own mother-tongue, turns to an alien language for the aching joy of self-expression, it is no surprise to find that the art becomes laden with a more serious thought. For the highest aim of self-expression even in art is after all self-realisation, This intense longing for the divine is visible in every song and every page of this collection ."

Better Village Schools: A programme of action for India By Mason Olcott (Y. M. C. A. Publishing House, 5 Russell Street Calcutta) Price Rs. 2.

The volume under review, in its third edition and entirely rewritten, is undoubtedly a very helpful contribution to the problem of rural education in our country, and is written by one who has actively worked in the field for many years. The entire volume is composed of materials directly concerned with Indian village life in all its aspects. A strong point of the book is the quotation of educational views and statistics from almost all available sources; and this makes the volume a most useful reference book for any one who is interested in the subject. Besides, there is a useful list of books at the end to stimulate and encourage further study.

Dr. Olcott's book is divided into three sections. The first is a general enquiry into rural conditions, and traces the facts of the struggle between what he calls "the strength of inertia and the forces of progress". The main aim of all educational effort, according to Dr. Olcott, should be the re-creation of rural India in three main directions—economic; hygienic; and social and civic. Much of the subject matter of this section is already familiar to most people in India—the increasing economic burden of the rural population, the appalling poverty and filth of our villages, the "fatalism" that dominates the lives of the villagers and so on--but the survey is still valuable not only because it is a correct appraisal of the various factors that have built up the village life of today, but also because it is illuminated and fortified by the extensive data which the author has gathered. One only wishes that the author had been a little more discriminating in the choice of his authorities when dealing with the question of Hinduism, for much of his knowledge of practical Hinduism seems to be derived from such musty sources as *The Encyclopaedia of Religion and Ethics*, and from the professedly missionary writings of people like Farquhar and others. The result is that the author shows at times a tendency to take for granted many customs, habits, and attitudes which, whatever might have been their sanctity in the past, are now surely, thought perhaps a little slowly, breaking down, giving place to more humane and altogether more tolerant social attitudes. To quote, for example, a Madras Government Order of 1919 on the subject of the admission of *harijan* boys into public schools is to ignore the tremendous awakening in our own time of India's social conscience in regard to the depressed classes of our population as a result of Gandhiji's labours and those of the Indian National Congress.

In the second enquiry, Dr. Olcott discusses the question of how *education can be remade to rebuild village life*. This is the most important and constructive section in the volume. He emphasises again the social aspect of education, and what is most interesting, agrees with the framers of the recent Wardha Scheme of education in their faith that the fundamental objective of all elementary and primary educational effort is "vocational and economic effectiveness" of those to whom education is imparted. He makes a powerful plea for eliminating wastage in rural education, and for making the curriculum and courses of the rural school "vital and useful".

The chapter on Adult Education is a brilliant analysis of the topic in all its aspects. The last enquiry is: *How can teachers be enabled to reform village schools and life?* He gives us a detailed programme of action in the matter of proper training and supervision of village teachers. Dr. Olcott regards the teacher, and rightly too, as the most important factor in the task of rebuilding village life, and believes that as a profession, teaching can rise to the level of educational statesmanship.

This is a book alive with conviction, enthusiasm and courage, and is thoroughly constructive. It declares a sound philosophy of rural education and embodies an eminently workable plan of educational reconstruction. Dr. Mason Olcott is neither a theorist nor a visionary, but a clear-sighted, practical reformer, one who backs his conclusions and suggestions with tested facts and wise experience. He is definite and he is particular, and, therefore, his book should serve as a practical guide to all who, whether as teachers or as workers, want to serve India through her poverty-striken and ignorant villages.

H. Sunder Rao.

Sri Bhagavad Gita. Revised in the light of an old Ms., edited with its gloss and commentary by Rajvaidya Jivaram Kalidas Shastri.

Mr. Shastri contends that the Gita should contain 745 verses and not 700 as we find it to do now. Accordingly his researches have enabled him to unearth a Ms. of Gita with some additional verses and about 250 variant readings. The book under review consists of the alterations as found in the Ms. The alterations as well as the additions are in no way an improvement upon the current text. Their only claims seem to be that they differ from the present text and that they are in a Ms. 'Siddhi Datri' is a gloss by Mr. Shastri wherein he ingeniously argues for the superiority of the Ms over the current version. Here the reasons given are neither convincing nor do the intrinsic value of the variations justify the claim. For instance in the current reading of the I stanza we have समवेता युयुत्सवः meaning 'assembled together and desirous to do battle' These adjectives according to the author are 'inappropriate', 'not suitable', because there may also be some who might have been coerced to join the battle, सर्वक्षत्रसमागम i. e., 'where all the kshattrias have gathered together, found in the Ms is 'appropriate'. But will not the question arise whether there were only kshatriyas on the Kuru Kshetra? Again सीदमानः has a peculiar charm over against विषीदन् for Mr. Shastri. So explaining the variations in stanza 27 Ch. I, he says 'Whose limbs are sinking on account of extreme anguish' is preferable, but in verse 46, he prefers उत्सृज्य 'Threw off' for विसृज्य. But throwing anything off naturally needs some exertion. So one may say 'Put down' of the current text is good enough.

The second part of the book contains the sanskrit commentary. Chandra Ghanta with its translation in English by the author for the first three chapters; shows the scholarship of the author and also his inexplicable aversion to everything not found in the Ms., which he possesses. Commenting on verse 42 Ch. II he at length tries to prove that एव is preferable to इह. But here unnecessarily enough he imputes motives to commentators like Sankara, Ramanuja and Nilakanta and without any convincing proofs claims validity to his own interpretations. It is a pity that certain forms of fanaticism have not been conducive to make Indian Research what it might have been. The get up of the book has been sadly marred by profuse printer's mistakes.

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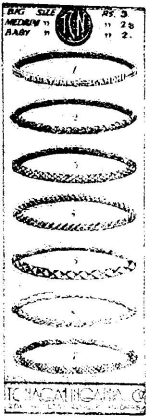

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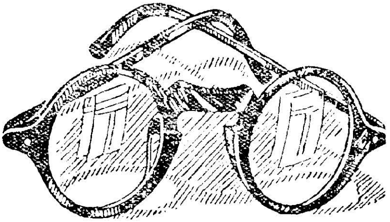

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